

2020

Water Conservation Plan Update



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Water Conservation Coordinator

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Introduction

The South Jordan City 2020 Water Conservation Plan has been prepared to comply with the Utah Water Conservation Plan Act of 1998 amended in 2004 with House Bill 71 Section 73-10-32. The act requires water conservancy districts and water retailers to file a water conservation plan with the Utah Board of Water Resources and ensure that it is updated every five years. This update outlines South Jordan City's current water conservation efforts and presents its current conservation goals.

As one of the fastest growing Cities in Utah, South Jordan City is increasingly aware of the need to maintain a supply of water to its current and future residents. South Jordan City's staff and City Council are committed to decreasing the City's per capita water use and meeting the new regional goal in Salt Lake County of 187 gpcd by the year 2030.

System Profile

South Jordan City is located in the southwest area of the Salt Lake Valley and is home to approximately 75,000 residents. South Jordan City has always made it a top priority to provide clean, safe, drinking water to its residents and businesses. The City maintains its own water system which includes approximately 20,758 residential connections and 1,145 commercial connections. The City also has 290 Institutional connections. All of the drinking water provided throughout the City is purchased from Jordan Valley Water Conservancy District (JVWCD), totaling approximately 15,175 acre-feet in 2019. Currently the city has 9 storage tanks with a total of 38.6 million gallons of storage capacity. The City also has 18 metered connections with JVWCD that feed into 8 separate pressure zones.

Connection Type	# of Connections
Residential	20,758
Commercial	1,145
Institutional	290

Table 1

The city currently provides approximately 3,662 residential properties with secondary water service as well as 11 City properties for the purpose of landscape irrigation, which accounted for approximately 5,910 acre-feet of use in 2019. The secondary water system mainly consists of a gravity fed system with a few exceptions where a pressurized system is provided. The City's secondary system draws water from five open canals and one underground well listed in the following Table, and owns a total of 5,808 shares with a potential use of 16,264.2 acre-feet. The City is committed to providing quality secondary water to those residents and businesses that currently have access. The City continues to evaluate each newly proposed subdivision development to determine the cost and ability to use secondary water.

Canal	Shares	Available Supply (AF)	Average Demand (AF)
Welby Jacob	2,343	2,343	1,409
Utah Lake	706	3,607.6	1,959
Utah Salt Lake	753	3,456.3	900
South Jordan	725	3,581.5	1,027
Beckstead	258	1,055.2	331
Shallow Water Right #59-5920	750	2,146.5	910.12
Daybreak Water Company	273	74.11	39.02

Table 2



Supply

South Jordan City currently purchases 100% of its culinary water from Jordan Valley Water Conservancy District. Data showing reliable supply, future supply, and groundwater recovery can be found in Jordan Valley's conservation plan update. Copies of these pages are added in Appendix A at the end of this report.

Source	Volume (AF)	Percentage
Purchased	15,175	100%

Water Measurement

Culinary Metering and Data Analytics

All culinary water used in South Jordan City is purchased from Jordan Valley Water Conservancy. It has always been of high priority for the City to have the capability to measure and track what water is being taken from each entry point connection to Jordan Valley feeds. As such, the City uses an advanced SCADA communication system to monitor all of its connection points to Jordan Valley Water. This system provides real time data gathering that is relayed back to City staff so changes can be made and usage can be tracked. All JVWCD entry points are equipped with a flow meter to monitor and track water usage from each site location.

Throughout the City, each connection to the water system is measured and tracked with a meter. The City is made up of 80% residential, 5% commercial/Institutional and 15% secondary connections. In 2016, South Jordan City completed an upgrade on the meter reading system. The City installed an AMI fixed network system that allows for more accurate and detailed data tracking. Hourly, daily and monthly usage data is collected from the system for every residential connection throughout the City and this information is used to help residents and City staff make more educated water conservation choices. The system is comprised of 7 collectors and 38 repeaters spread throughout the City strategically to collect meter data from the meters in its coverage area. Every day at 6pm

the collectors and repeaters send a signal and gather data from the last 24 hours of water usage from every meter in the City. This data is then sent to the City computer network and uploaded into the fixed network system to be represented as water use data. This data is then easily accessed by City staff to evaluate water usage upon resident request.

In 2018 the City worked to bring on a customer portal system that provides a web based application allowing residents to access their hourly, daily and monthly usage data from their own computer or cell phone. With this portal residents are able to set alerts for high usage and leak events as well as set water usage goals for each month. The City has been offering a one-time utility bill credit of \$20 to those who sign up for the portal and create a water usage goal. To date there are 2,046 residents that have signed up for the portal which represents 9.8% of total connections. Our goal is to have 20% of our connections using the portal by 2025.

The most recent metering initiative the City has implemented is a program for testing and replacing residential and commercial connection meters. This programs objective is to evaluate the accuracy of in-service flow meters over a wide range of flow rates currently specified with AWWA standards. The goal is to gain a more detailed understanding of flow accuracy of meters tested to improve accuracy of water accounted for in utility billing. This program has two focus areas. They are a) to spot check residential and commercial meters and b) investigate the effects of age, usage, and area on meter accuracy degradation. In order to meet the two focuses of the program, the program has been divided into three phases: Phase 1 - The City has purchased a Portable Small Meter Tester (PSMT) which is being used to test the accuracy of City water meters between $\frac{3}{4}$ " and 2". Study and preparation is necessary to fully understand the AWWA meter standard. A minimum of three individuals will collaborate to discuss the best way to approach and test meters. Phase 2 – Investigating the City water system. A list of high usage meters has been generated; these meters are both older and newer. The City will be divided into areas so that each section gets some testing incase location and supply influence the accuracy of the meter. Phase 3 – The City will select 20-30 meters to be tested within the first year. This will give the City a representation of what needs to be done as we move forward. Results

will be documented from meter testing to be sure it meets AWWA standards and parameters. If a meter fall outside these parameters it will be scheduled for replacement.

Secondary Metering Initiatives

In 2019 South Jordan City installed 105 secondary meters into its system. These meters have since been added to the fixed meter reading network system and are being tested and read monthly as a pilot project to spur further funding and water conservation. Meters have also been installed on most secondary weirs and pump stations throughout the City. These meters are read monthly by City staff throughout the watering season. The data is then collected and used to get a better idea of actual water use and demand inside each secondary zone throughout the City. A grant was obtained from the U.S. Bureau of Reclamation to install approximately 443 additional secondary water meters to the City's system. The City intends to provide secondary water consumption data to these users, allowing users to know how much water they are using and to set goals to reduce water consumption.

Water Loss Control

Leak Repair and Mitigation

Tracking and preventing lost or unaccounted water has always been a priority in South Jordan City. Daily routine maintenance is performed on the system to ensure it is functioning at the highest capacity with minimal loss. Maintenance crews and on-call personnel take leaks in the system very seriously and when able to, system leaks are fixed on the spot. South Jordan City takes pride in its initiative to repair water leaks wherever possible to reduce the amount of lost water in the system. In 2019 South Jordan City maintenance personnel fixed a total of 16 culinary system leaks and 8 secondary system leaks. Along with those, City personnel also responded to 220 leak investigations where quick or minimal repairs were made or the leak was deemed to be on the homeowner's side.

With the addition of our fixed network system we are able to easily identify service connections throughout the City with leak events. Since that time utility billing has been

proactively sending leak letters to residents informing them if they are experiencing an unknown leak somewhere in their system. In 2019, 1,796 leak notification letters were sent out to residents informing them of their leak event. 58 of those residents contacted the City requesting City personnel to assist in diagnosing the location of the leak event. City wide leak reports are also generated monthly and sent to City staff so contact can be made with residents to help them resolve their water leak event.

Unaccounted Water Tracking

Every year the City Water Manager tracks unaccounted water in areas such as construction flushing, large leak events, tank leakage, and hydrant meters. This tracking helps keep the City informed with used water that is not being accounted for through a meter. Doing this can also help track the cost of lost water when calculating financial numbers at the end of each year. A table showing unaccounted water tracking for 2019 is provided below.

Source	Gallons	Acre Feet
JVWCD Supply	4,905,273,000	15,053.73
Utility Billing	4,554,751,000	13,978.02
South Valley Sewer District Use	641,000	1.97
City Meters	201,573,000	618.60
Flushing	3,886,000	11.93
Hydrant Meters	26,159,000	80.28
Total	4,787,010,000	14,690.79
Unaccounted Water	118,263,000	362.94
	2.41%	

Billing

2019 Rate Increase

In 2019 South Jordan City performed an updated water rate study and issued a new rate plan for water usage within the City. The updated rate design comes in an effort to reduce confusion and promote conservation efforts throughout the City by lowering the monthly base rate and increasing the cost per 1,000 gallons.. A secondary water rate was

designated at \$18.00 monthly for non-pressurized or \$23.00 monthly for pressurized until metering can fully be implemented. The newly implemented fee schedule for culinary water consumption can be reviewed in the following table.

Monthly Culinary Water Base Rates		
Connection Size	Multiplier	Base Rate
¾"	-	\$30.00
1"	1.09	\$32.80
1 ½"	1.12	\$33.50
2"	1.23	\$37.00
3"	1.82	\$54.50
4"	2.47	\$74.10
6"	4.27	\$128.00
8"	6.60	\$198.00
10"	8.00	\$240.00

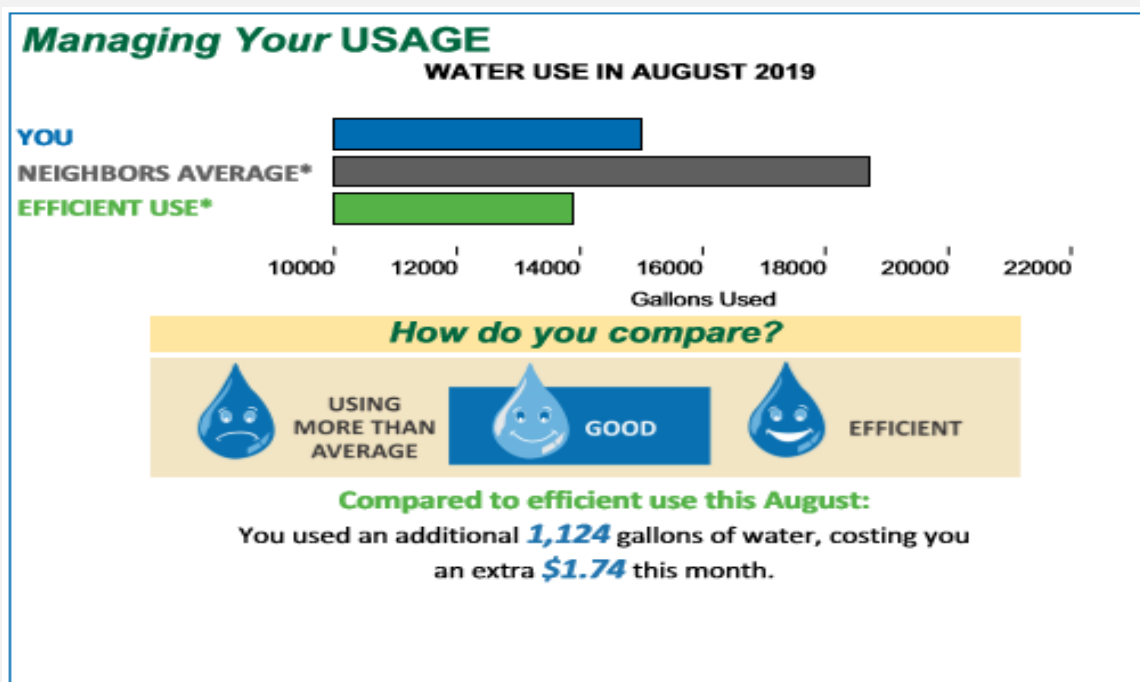
Volumetric Culinary Water Rate Structure		
Single Family ¾" Meter		
Charge per Thousand	Minimum	Maximum
\$2.00	-	6,000
\$2.25	6,001	17,000
\$2.50	17,001	42,000
\$2.75	42,001	74,000
\$3.00	74,001	999,999,999,999
Single Family 1" Meter		
Charge per Thousand	Minimum	Maximum
\$2.00	-	7,000
\$2.25	7,001	19,000
\$2.50	19,001	46,000
\$2.75	46,001	81,000
\$3.00	81,001	999,999,999,999
Non-SFR ¾" Meter		
Charge per Thousand	Minimum	Maximum
\$2.00	-	12,000
\$2.25	12,001	34,000
\$2.50	34,001	84,000
\$2.75	84,001	148,000
\$3.00	148,000	2,000,000,000,000
Non-SFR 1" Meter		
Charge per Thousand	Minimum	Maximum
\$2.00	-	14,000
\$2.25	14,001	38,000
\$2.50	38,001	92,000

\$2.75	92,001	162,000
\$3.00	162,001	2,000,000,000,000
1 ½" Meter		
Charge per Thousand	Minimum	Maximum
\$2.00	-	24,000
\$2.25	24,001	68,000
\$2.50	68,001	168,000
\$2.75	168,001	296,000
\$3.00	296,001	4,000,000,000,000
2" Meter		
Charge per Thousand	Minimum	Maximum
\$2.00	-	48,000
\$2.25	48,001	136,000
\$2.50	136,001	336,000
\$2.75	336,001	592,000
\$3.00	592,001	8,000,000,000,000
3" Meter		
Charge per Thousand	Minimum	Maximum
\$2.00	-	90,000
\$2.25	90,001	255,000
\$2.50	255,001	630,000
\$2.75	630,001	1,110,000
\$3.00	1,110,001	15,000,000,000,000
4" Meter		
Charge per Thousand	Minimum	Maximum
\$2.00	-	150,000
\$2.25	150,001	425,000
\$2.50	425,001	1,050,000
\$2.75	1,050,001	1,850,000
\$3.00	1,850,001	25,000,000,000,000
6" Meter		
Charge per Thousand	Minimum	Maximum
\$2.00	-	336,000
\$2.25	336,001	952,000
\$2.50	952,001	2,352,000
\$2.75	2,352,001	4,144,000
\$3.00	4,144,001	56,000,000,000,000
8" Meter		
Charge per Thousand	Minimum	Maximum
\$2.00	-	576,000
\$2.25	576,001	1,632,000
\$2.50	1,632,001	4,032,000
\$2.75	4,032,001	7,104,000
\$3.00	7,104,001	96,000,000,000,000
10" Meter		
Charge per Thousand	Minimum	Maximum

\$2.00	-	720,000
\$2.25	720,001	2,040,000
\$2.50	2,040,001	5,040,000
\$2.75	5,040,001	8,880,000
\$3.00	8,880,001	120,000,000,000,000

Updated Water Bill

In 2018 South Jordan City worked with Pinnacle Printing and developed a new water bill. The bill is heavily directed towards conservation efforts by educating residents with water consumption data. During the outdoor watering season (April-October) the new water bill provides a graph that helps residents see if they are being efficient water users. The graph was created by using a formula that calculates efficient water use based on the lot size of each home. This lot size is then applied to a landscape percentage from our water master plan based on where the home sits in the City and weather data from the surrounding area to provide an efficient use estimate for each home in the City. This data is then placed on a graph with neighbor usage and the current usage from the resident so they can easily see where they fall. Smiley faces are used below the graph to represent how well the resident did during the month along with an estimate of how much they saved or spent on water due to their usage. See the figures below for an example of the billing graph and graph placement on the bill.





City of South Jordan
1600 W. Towne Center Dr
South Jordan, UT 84095
(801) 446-HELP (4357)

Utility Bill Customer Copy

Keep this portion for your records
Pay online at www.sjc.utah.gov



Account # - Customer #	Bill Date	Bill #	Due Date	Total Due
[REDACTED]	07/20/19	[REDACTED]	08/20/19	\$108.52
[REDACTED]				Current charges: \$108.52
[REDACTED]				Prior balance: \$78.94
[REDACTED]				Adjustments: \$0.00
[REDACTED]				(Payments received): -\$78.94

City Messages

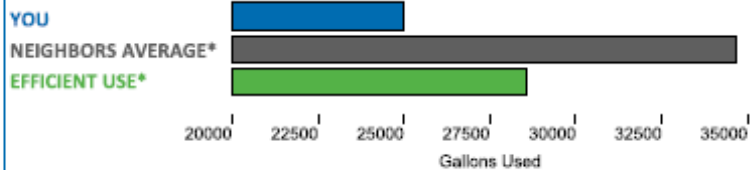
IS YOUR CONTACT INFORMATION WITH US UP-TO-DATE? TO UPDATE YOUR CONTACT INFO TO ENSURE IMPORTANT NOTIFICATIONS ARE RECEIVED - PLEASE EMAIL BILLING@SJC.UTAH.GOV

Delivery Method Message

You are signed up to receive your statements thru the mail (printed).

Managing Your USAGE

WATER USE IN JULY 2019



How do you compare?



USING
MORE THAN
AVERAGE



GOOD



EFFICIENT

Compared to efficient use this July:

You are an efficient user.

Detach and return the portion below with your payment



City of South Jordan
1600 W. Towne Center Dr
South Jordan, UT 84095
(801) 446-HELP (4357)

Utility Bill Remit Portion

Please write your Account # and Customer # on your check and enclose this portion of the bill with your payment

Service Address	Bill #	Account # - Customer #	Due Date	Amount Due
[REDACTED]	[REDACTED]	[REDACTED]	08/20/19	\$108.52

One-time Round it up for Art: _____

Amount enclosed: _____

0002156

1-000000



☐ I would like to Round it up for Art on a monthly basis
Or
I would like to contribute the following to Art monthly
☐ \$1 ☐ \$3 ☐ \$5 ☐ \$10 ☐ \$ _____
See www.sjc.utah.gov for more information

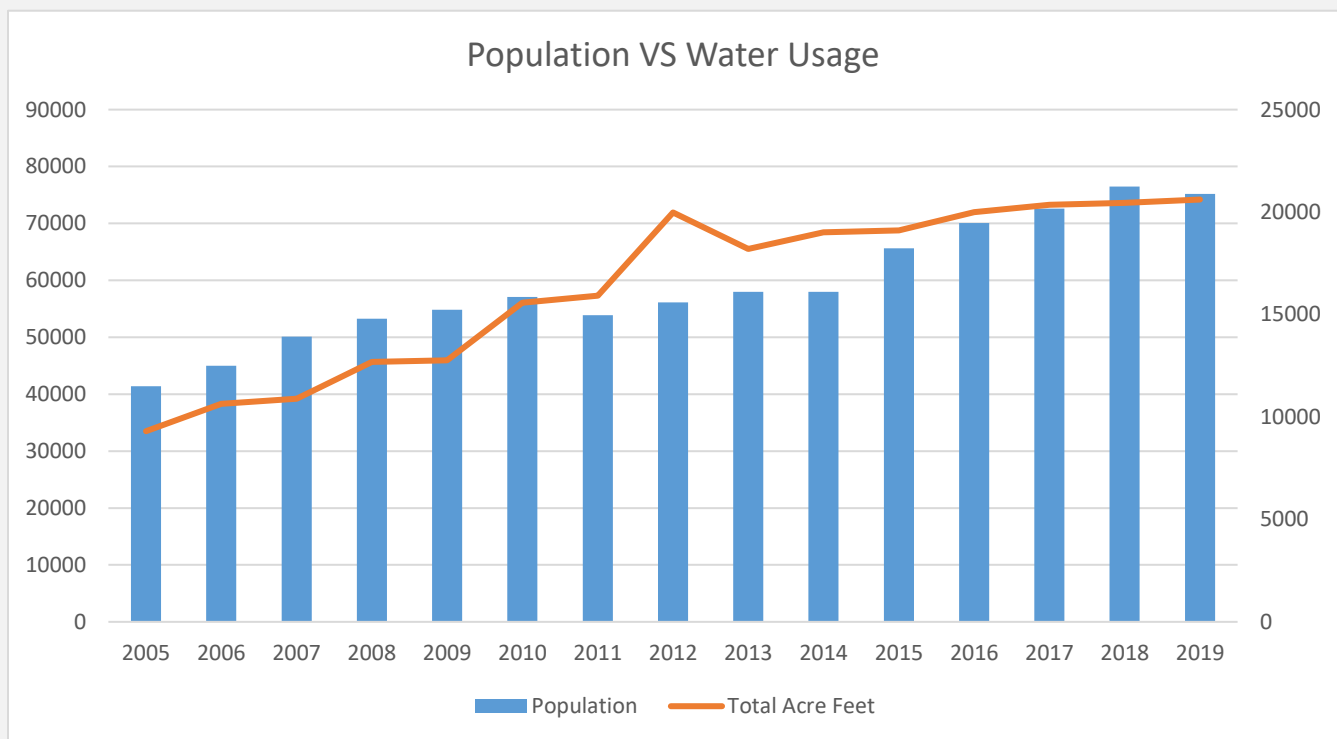
00186042020600737476200000108522

Water Use

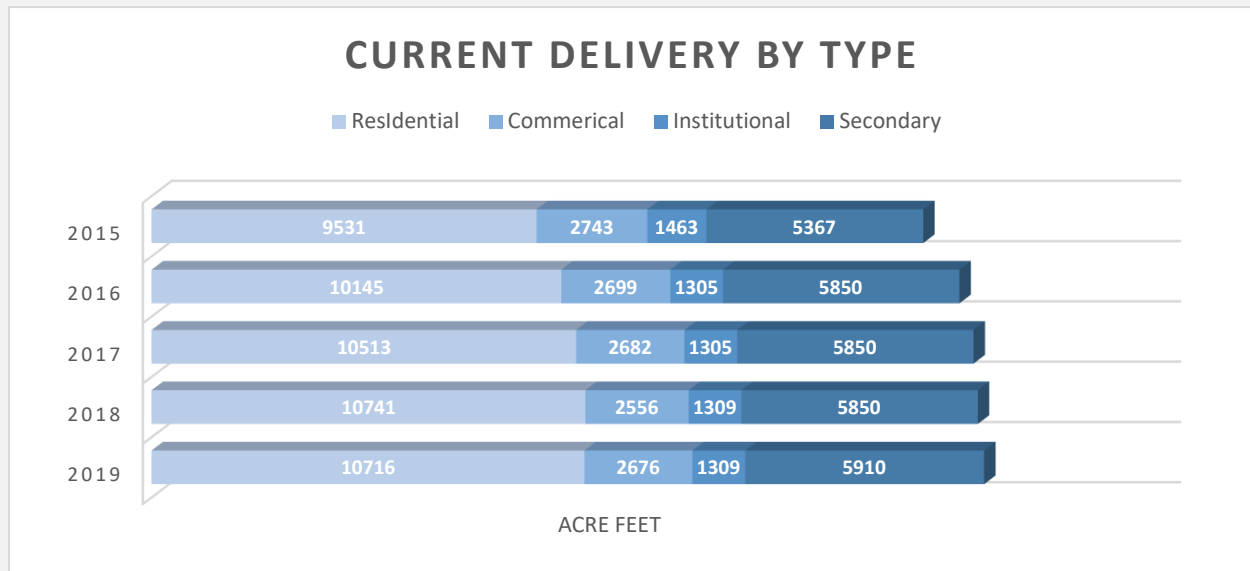
Salt Lake County Regional Goal

The new regional goal for Salt Lake County is 187 GPCD by 2030. We intend to strive for that as our goal over the course of the next 10 years. South Jordan City would like to reduce its water usage by a minimum of 12% over the course of the next 5 years. Below are charts and graphs that show current water usage and GPCD in South Jordan City including both culinary and secondary water usage. For a detailed look at the new regional goals use the following link: <https://water.utah.gov/wp-content/uploads/2019/12/Regional-Water-Conservation-Goals-Report-Final.pdf>

Current Population VS Water Usage



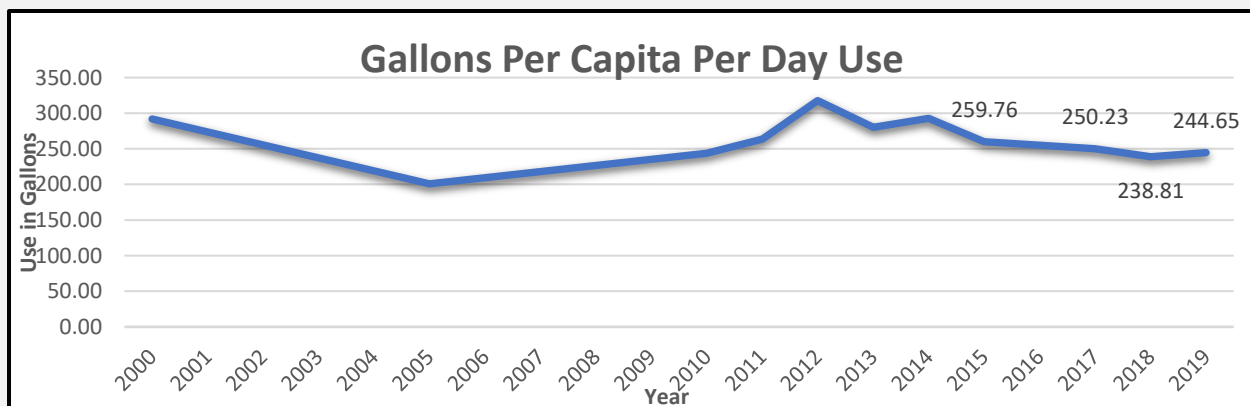
Current Water Deliveries by Type



Current GPCD by Type

	Indoor	Outdoor	Secondary	Total
Residential	49.60	77.59	70.15	197.34
Commercial	12.38	19.37	0	31.75
Institutional	6.05	9.47	0	15.52
Total	68.03	106.43	70.15	244.61

GPCD Water Efficiency Progress



Current Conservation Practices

Coordinator and Staff

South Jordan City has a full time Water Conservation Coordinator that manages and directs the conservation program. The coordinator schedules appointments, manages all the program documents and rebates and is able to focus on public outreach and conservation initiatives on a daily basis. In 2019 the City was able to bring on an additional full-time position for the water conservation group. With the added position the City is now able to complete more rebates, audits and consultations as well as assisting customers with leak checks at their homes. These programs and positions are overseen by the Public Works Director, Associate Director and Water Manager. The complete list of contacts for South Jordan City water conservation can be found below.

Name	Position	Phone Number	Email Address
Jason Rasmussen	Public Works Director	801-253-5203 Ext 1712	jasmussen@sjc.utah.gov
Raymond Garrison	Associate Director	801-253-5203 Ext 1705	rgarrison@sjc.utah.gov
Cary Necaise	Water Manager	801-253-5203 Ext 1709	cnecaise@sjc.utah.gov
Jordan Allen	Conservation Coordinator	801-253-5203 Ext 1720	joallen@sjc.utah.gov
Ty Pierce	Conservation Tech	801-253-5203	tpierce@sjc.utah.gov

Public Education and Outreach

South Jordan City currently offers a wide variety of opportunities to involve and educate its residents about water conservation. The City has offered education and information regarding water conservation through its website and print publications.

Water Workshop Classes

Currently the City offers two water education workshops a year, one in the spring and another in the fall. These workshops are aimed at providing helpful information about the City water system. Education on all of the City conservation programs and initiatives is readily available to residents during these classes such as rebate offerings, water audits and Locascapes rewards. Water savings tips are also discussed by our Water Conservation Coordinator and questions are answered from residents. Other City staff are also on site to educate on things such as smart irrigation practices, sprinkler system repair, and startup/winterizing a system. The workshop also provides an opportunity to discuss secondary water usage and best practices as well as backflow prevention and maintenance to prevent cross contamination events. These classes have had great turnout and have served as great education for residents and advertisement for City offered programs.

National Water Week

The City's Water Department also takes time every year as part of National Water Week to visit elementary schools within South Jordan City to help educate fourth graders about the water cycle and water conservation. This program has been very well received by parents, teachers, and students. Valuable information regarding storm water best practices and conservation techniques are sent home to be discussed in the family unit. South Jordan City anticipates to continue this program in the coming years when possible.

Water Audit Program

In 2018 South Jordan City started a City wide water auditing program. This program allows residents to schedule hour long appointments with QWEL certified

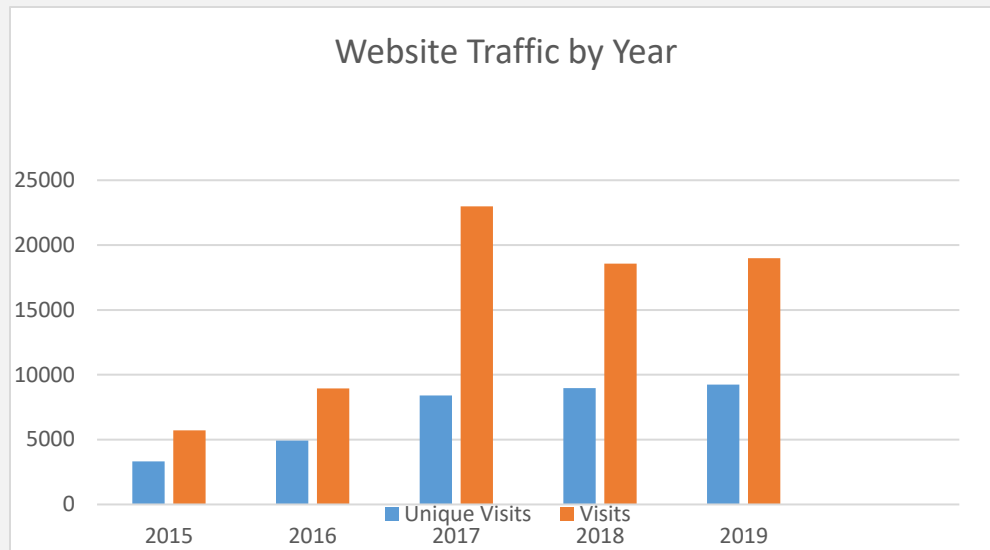
staff to go over their outdoor water usage and assist them with water savings during the summer months. City staff will perform a QWEL certified audit on the sprinkler system using catch cans, sprinkler system info and updated weather history from the



region to determine effective watering times and frequency based off the specific system being tested. It has been determined that 50% of people requesting these audits are overwatering by a margin of 30% of normal usage. This program has been very successful in identifying these high users and educating them of proper watering habits. In 2019 City Staff performed 61 audits between the months of May and September.

[Watersmart Sojo Website](#)

In 2015 South Jordan City implemented a website for its water conservation program. On this website you can find valuable conservation information such as monthly tips, information on the City water system, focus articles and event calendars. All rebate and incentive information is located under its own tab labeled “Rebates” as well as other tabs designated to sign up for our water usage customer portal and water audit program. Over the last five years website traffic has increased and interaction is on the rise for 2020. In an effort to improve website interaction in the coming years, additional outreach is being done through social media and bill mailers to advertise the website and programs. Below is a graph showing the interaction in site visitation over the last 5 years.



City Wide Central Control System

In 2014 South Jordan City began installing a central control system throughout all City owned landscapes to help maintain and manage effective water usage. This system monitors and runs 42 irrigation controllers throughout the city. The system communicates between a master controller and a web-based app that can be accessed anywhere an internet connection can be established. Changes can be made to each individual controller such as run times, watering days, start times and rain delays. This system is also capable of alerting high flow alarms if there are leaks or breaks within the system. This capability saves both time and water as adjusting them can be done quickly and effectively and line leaks are located and fixed in a quicker manner. City staff have been able to save millions of gallons of water throughout the last six years by effectively managing this system. South Jordan City plans to continue use of this system and plans to add to it as the City grows.

Programs and Incentives

South Jordan City is committed to reducing water use and has made good progress in its original goal of 25% overall reduction before 2025. The City has already implemented some

effective practices and will continue programs that assist the goal to conserve water. Many of the following practices address aspects of the problems previously identified and the goals listed. These practices plan to further address issues and add to the reduction of water use within the City.

Toilet Replacement Rebate Program

Since 2012 the City has implemented a toilet replacement rebate program. This program consists of reimbursing up to \$200.00 to City residents who replace toilets installed prior to 1992 with a high efficiency toilet (HET) which is 1.28 gallons per flush or less. City staff has received good response from residents regarding this rebate, which has been the most popular rebate program. For this reason, the City desires to continue this program by requesting \$14,250 in grant funds from JVVCD with the City matching 20% to further the program. Advertisement of the toilet rebate program will continue through the City's water conservation website, mailers and notes in the water bill. Information regarding this rebate will also be provided at workshops and events throughout the next fiscal year. It is expected that residents will save on average between 2-3 gallons of water per flush when high-flow toilets are replaced with a new HET. The average person flushes the toilet 5 times per day, resulting in up to 15 gallons saved per person per day. WaterSense estimates that 13,000 gallons of water will be saved annually with each inefficient toilet replaced.

Water Sense Fixture Rebate Program

Indoor fixtures such as faucets and showerheads that meet water-sense guidelines and are being installed in homes built before 2005 are a proven way to decrease indoor water use. The City will be continuing its program to offer up to \$200 in rebates to residents that wish to update some of their high-flow fixtures with new fixtures that have the water-sense logo. On average by replacing fixtures in a home, up to 1.5 gpm can be saved every time a fixture is turned on. Replacing showerheads with WaterSense labeled models can reduce the average family's

water usage by more than 2,700 gallons of water per year, equal to the amount of water needed to wash 88 loads of laundry. For this reason, the City desires to continue this program by requesting \$9,250 in grant funds from JVWCD with the City matching 20% to further the program. Additionally, replacing old and inefficient bathroom faucets and aerators with WaterSense labeled models can save the average family \$250 in water costs over the faucets' lifetime. This rebate program is advertised through the City's web site, water bill, mailers, and presented during City events.

Water Wise Plants Rebate Program

Water-wise or drought tolerant plants are plants that adjust and survive with little or no irrigation within the South Jordan climate. There are several benefits for including this type of vegetation in the design of landscapes, some of which include low water use for irrigation, less use of fertilizer, and low maintenance. Contrary to what most people think there is a variety of water-wise plants from ground cover to perennials which are great for both residential and commercial use. Therefore, the City has made an effort to promote conscious landscape design and plant selection by encouraging drought tolerant and water-wise planting. The City is allocating \$19,250 of available JVWCD grant money for the water-wise plant rebate with the City matching 20% of its own funds to further the program. Advertisement of the water-wise plant rebate program will be done through the City's water conservation web site, water bill, mailers, and presented during City events. It is anticipated that with every plant rebate, a minimum of 4,000 gallons of water per year will be saved per applicant.

Residential Drip Conversion and Rock Mulch Program

The parkstrip conversion projects that have already taken place have generated such a positive response that the City intends to continue its program to help facilitate residential conversions. The average parkstrip in South Jordan uses over 2,000 gallons of water each month if watered efficiently; comparatively a parkstrip featuring water-wise plants would use less than 500 gallons each month. A recent survey of City residents showed 82% of residents would be willing to remove turf from their park strip if there was some assistance provided by the city. The City is proposing to allocate \$19,250 of available JVWCD grant funds for this program, with the City matching 20%. This program would consist of the following options to residents.

1. Drip system conversion kit: A drip system conversion kit will be supplied to residents with all the parts necessary to convert the average parkstrip or grass area from overhead spray irrigation to a point source drip that can be used to irrigate ground cover, bushes, grasses, trees, and shrubs. The kit can be picked up at South Jordan City Public Works after scheduling an appointment with the Water Conservation Coordinator. To be eligible for the kit, residents must remove a minimum of 200 square feet of grass and replace with water wise plants. Residents are also required to agree to and sign a contract to receive the drip kit and have 90 days to install the drip system. Each kit will cost approximately \$92.



2. Rock mulch: One of the most significant components of an effective water-wise landscape is the material used to cover areas with no vegetation. One of the best ground coverings for this is rock mulch; however it can be extremely costly to residents. The City seeks to assist by providing

and delivering rock mulch to its residents, when a qualifying project is being done. Residents must contact the Water Conservation Coordinator to setup a meeting for project approval. After approval of the project, a minimum of 200 square feet of grass must be removed and plants with drip irrigation must be installed before rocks will be delivered. After delivery residents will have 48 hours to move rock mulch into the designated landscape area. Each resident will need to sign and agree to the program terms and agree to share water usage data. The estimated amount of rock needed for an average project would be 5 cubic yards at a cost of approximately \$18.00 per yard.

These two programs in conjunction with the water wise plant rebate help further the idea of a water-wise landscape for our specific climate. Residents are able to convert their parkstrip or landscape at little to no cost to them and the water savings are tremendous for the City. The City believes that these programs will have a great impact on water conservation efforts throughout the upcoming year. It is anticipated that with every conversion, a minimum of 7,000 gallons of water annually will be saved per applicant.

Ordinances and Standards

South Jordan City is striving to implement effective ordinances and standards for water conservation wherever possible. We are currently undergoing discussion of adopting JVWCD newly proposed water efficiency regulations within the City and hope to see some changes within the next 5 years that reflect our ongoing goal to save water. Currently South Jordan City has the following ordinances and standards implemented for achieving this goal:

Water Shortage Management Plan

The South Jordan City Water Management Plan is intended to preserve and protect public health and safety during periods of drought, temporary water shortage and supply interruption. This plan is used to support current water efficient

ordinances and South Jordan City's Water Conservation Plan. It is necessary for South Jordan City water users to know what action is needed to protect our water supply during times of shortages and drought. This plan outlines the needs for water conservation and when watering restrictions are needed along with how this provision will be enforced. A complete copy of this plan can be found in Appendix B.

City Code Waste Prohibited

South Jordan City code chapter 13 is detailed for the water service system parameters. Section 13.04.260 (Appendix C) outlines waste prohibited and allows City staff and City council to act in the case of excessive or irresponsible water waste. All fixtures connected to the City water system shall be required to be kept in good condition under the homeowner's expense and shall be remained closed when not in use. This code allows service interruption if a water waste event is not in accordance with this chapter.

City Code Water Efficient Landscaping

South Jordan City adopted an ordinance for water efficient landscaping on June 18, 2002. The goal of this ordinance is to provide policies for commercial, industrial, multi-family and single family residential developments. The City's ordinance is found under South Jordan City Code: Chapter 16.30 Water efficient landscaping (Appendix D). The ordinances found in Chapter 16.30 are aimed at ensuring best practices in regards to landscaping and outdoor water use.

Future Conservation Practices

As South Jordan City moves towards the new regional goal of 187 gpcd, it is important that we continue our conservation efforts and focus on implementing new best practices moving forward. Some of the following plans include changing City owned parks and park strips to

xeriscape, additional rebate incentive offerings, leak notification program and better education and outreach to our residents and customers. Through a dedicated effort of City Council and staff, these efforts will be put into action over the next five years and will ensure getting the City closer to its goal of 187 gpcd by 2030.

City Landscape Change Over Projects

In early 2020 South Jordan City identified six locations where major changes can be made to improve the landscape efficiency of some City owned properties. It is anticipated that South Jordan City will request additional grant funding from various sources in the 2020-2021 fiscal year to aid and assist with starting these project conversions. These projects are figured to have an annual water savings of 12.79 acre feet per year. The following table shows each location with the current square footage of grass and the square footage proposed to convert. These numbers have been used to figure the annual savings of water per location. The City plans to identify new locations over the next five years to continue these conversions and hopes to eliminate inefficient landscaping throughout City limits.

Location	SF Grass	Annual Water Use	SF Converted	Annual Savings
Oquirrh	476,720	130,978,548	57,457	1,310,123
Y Worry	4,947	135,915	4,947	112,800
Prospector	97,226	2,671,216	32,501	741,081
Park Road	4741	130,255	4,741	108,103
Tennis	2,107,606	57,904,999	20,174	460,003
Heritage	63,013	1,713,238	63,013	1,436,809
Total Gal				4,168,809
Total AF				12.79

Additional Programs and Incentives

South Jordan City has identified an opportunity for expansion within its conservation program to add more incentives for water savings. Current incentives have been very successful and the City plans to pilot and implement the following programs over the next five years.

Water Absorbent Sand

In 2019 South Jordan City began looking into ways to prevent excessive water use in areas of the City that are made up of highly clay based soils. One of the major problem areas within the City is the Daybreak community. Problems of run off and excessive watering are always being reported and mitigation efforts are minimal. In an effort to assist residents in this area City staff have identified a sand like fertilizer substance that can be spread across a grass landscape to help retain water and reduce water use. City staff performed a pilot test in July of 2019 and has determined through working with the resident that up to 20% of water usage can be cut back when using the product. South Jordan City has purchased an additional 20 bags of the substance to be distributed over 5 homes in the fall and spring of 2020 - 2021. Detailed logs and testing will be done as the pilot project is implemented in hopes to have productive data to prove the effectiveness of this product within our Daybreak communities.

Concrete Curbing

South Jordan City has a very effective drip system distribution incentive that can also be combined with our water wise plant incentive to convert parkstrips or existing grass areas to water wise landscape. Recently, City staff has had inquiries for a curbing incentive when removing grass and adding water wise landscapes. Residents have expressed a desire to convert grass areas into flower beds using our existing incentives but have mentioned that if curbing was an option that they would be more likely to participate. City staff has begun the process of organizing and

drafting the curbing incentive. It is anticipated that when a resident is removing a minimum of 200 square feet of grass, this incentive will be available. Residents may receive up to \$200 towards curbing costs on qualifying projects. Costs and detailed program guidelines will be provided in the coming months as this program is developed.

Smart Controllers

South Jordan City is looking at offering rebates for residential use of smart controllers that will offer better control and weather monitoring to reduce outdoor water use. In the past, the City has offered rebates for smart controllers with low success; however there has recently been an increase in more usable technology and only proven qualified controllers will be approved. Alongside the State controller offering the City anticipates a much better result for this program with availability at the City level. Program guidelines are expected to mirror that of the State program. Also the City feels that by incorporating this incentive into its existing programs, staff would be more aware of residents using the incentive and education of smart controllers could be offered when residents submit for reimbursement. This would be effective in assisting residents with controller setup as well as promoting our water audit program. It is anticipated there will be a stronger participation in the use of smart controller technology if this incentive is added to our program offerings.

Leak Detection/Mitigation Program

With the addition of the fixed network system, South Jordan City has been very proactive at notifying and helping residents to locate leaks on their properties. In early 2018 South Jordan City launched a leak detection project in hopes to reduce the amount of leak events in the City and to help notify residents of water loss on their properties. City staff drafted a leak notification door hanger with staff contact information to schedule a return appointment (Appendix E) if a resident was unable

to be home. Water division employees were able to visit 89 homes over the course of two days. Within two months 56 residents had resolved their leak issue with an additional 12 being made aware that they had a problem. Using our fixed network system we were able to track the duration of the leak and how much water it had lost over its course. With these numbers South Jordan City staff estimates that a future loss of over 70,000,000 gallons of water annually was prevented by helping to resolve 56 unknown leak events. (Appendix F) With the addition of another water conservation employee in 2020 South Jordan City plans to restart this project on a monthly basis. A monthly leak list will be generated and sent to City staff and contact with residents will start to be made on a more frequent basis. South Jordan City has set a goal to visit 100 resident homes per month to advise and assist them with unknown leak events. We feel that this will be a huge contribution to water conservation efforts and water savings if this program can be effectively managed and maintained.

Implementation Summary

South Jordan City's Council and staff are committed to ensuring the outlined goals are reached and that appropriate action will be taken. It is understood that the Water Conservation Coordinator will also place a reasonable timeline for each project to insure that our goals are met within the time presented. It is also understood that through authorization of the City Council and under the guidance of the City Manager, funding will be provided for the measures provided in this plan.

It is also recommended that the Water Conservation Coordinator make annual reports on the progress of the water conservation plan and the goals outlined within to the City Council. The Water Conservation Coordinator will also continue to update the plan to insure that it meets changing conditions and needs within the City. This plan will also be updated and resubmitted to the Utah Division of Water Resources in 2025.

Appendix A

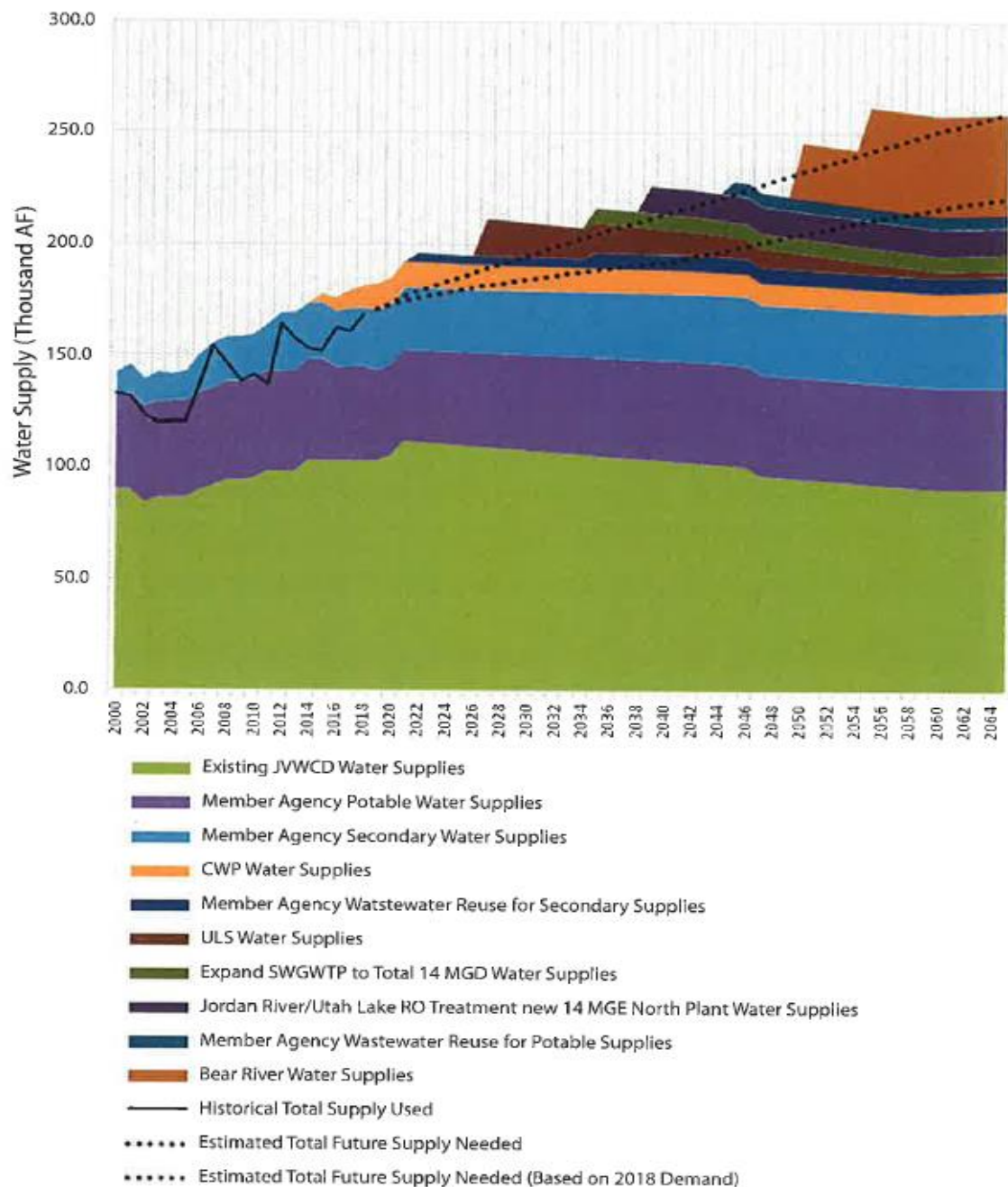
Jordan Valley Water Supply Data

WATER SUPPLY

TABLE 2.3 – JWCD's Current Water Supply

NAME OF SUPPLY	NORMAL YEAR YIELD (AF)	RELIABLE DROUGHT YEAR YIELD (AF)
CENTRAL UTAH PROJECT ^(a)	50,000	50,000
PROVO RIVER WATER USERS COMPANY SHARES		
PROVO RIVER DIRECT FLOW	17,200	11,455
DEER CREEK STORAGE	11,300	8,881
ECHO STORAGE	3,500	3,206
WEBER RIVER DIRECT FLOW	0	826
UINTA LAKES	3,000	2,400
CONTAINED SHARES	7,600	5,000
CENTRAL WATER PROJECT (CWP)	11,680	10,500
WEST UNION CANAL RIGHT	5,300	3,070
HIGH QUALITY GROUNDWATER ^(b)	22,500	22,500
LOCAL MOUNTAIN STREAMS	3,000	2,000
SOUTHWEST GROUNDWATER PROJECT (ZONE B AND LOST USE) ^(c)	7,000	7,000
TOTAL:	142,080	126,838
References:		
(a) Includes 6,300 AF currently turned back to CUWCD for instream fishery flows in the Provo River.		
(b) Includes additional 1,500 AF yield from equipping Etienne Way, Murray-Holladay Road, and other new high-quality wells. Also includes 1,000 AF estimated yield from treating Casto and Dry Creek Springs.		
(c) Includes additional groundwater development to support the third treatment train at SWGWTP.		

FIGURE 2.2 Reliable Water Supply Through 2065



GROUNDWATER STORAGE AND RECOVERY

In 2001, JWCD completed construction of facilities for an artificial groundwater recharge project in the southeast area of the Salt Lake valley. These facilities allow JWCD to inject surplus supply from its water transmission system into a deep principle aquifer (typically from March-May). Injected water can then be recovered by pumping wells later in the summer or in subsequent years when it is needed. While JWCD typically injects less than 1,000 AF per year, its facilities are capable of injecting around 5,000 AF annually if needed.

Appendix B

South Jordan City Water Shortage Management Plan

Residential and Commercial Water Conservation Guide

What is the Water Shortage Management Plan?

The South Jordan City Water Management Plan is intended to preserve and protect public health and safety during periods of drought, temporary water shortage and supply interruption. This plan is used to support current water efficient ordinances and South Jordan City's Water Conservation Plan.

It is necessary for South Jordan City water users to know what action is needed to protect our water supply during times of shortages and drought. This document outlines the needs for water conservation and when watering restrictions are needed along with how this provision will be enforced. South Jordan City has a purchase contract with Jordan Valley Water Conservancy District (JVWCD) for 100% of its culinary water; JVWCD also determines its own level of conservation measures that will be enforced due to supply shortage. The provisions of this plan apply to all persons, customers, and property utilizing culinary water provided by South Jordan City. For restrictions and use of secondary water please see the secondary water shortage management plan.

The Water Conservation Plan along with current water efficient ordinances can be found at...

For further questions please contact the water conservation coordinator at (801)253-5230.

Water Shortage Phases

South Jordan City along with Jordan Valley Water Conservancy District carefully monitors its water supply and use. Through careful monitoring South Jordan City will use this data in coordination with JVWCD to determine current drought and water conditions. Based on current levels of the water supply and current conditions, South Jordan City under the direction of JVWCD will implement the water shortage phase for a given time frame.

Each phase will be enacted by the City Manager under the direction of either the Water Manager for South Jordan City or by our water supplier Jordan Valley Water Conservancy District. Once a water shortage phase is entered, the City Manager will contact the City Council and Mayor and enact the proper notification steps according to the notification plan.

The level of water shortages has been categorized into four phases according to the level of water available. Each phase is labeled and color coded to illustrate when a phase is in effect. The four phases are as follows:

Phase I: Advisory Phase (Green)

Phase II: Moderate Water Shortage (Blue)

Phase III: Moderate to Severe Water Shortage (Orange)

Phase IV: Severe Water Shortage (Maroon)

South Jordan City water users will be informed of which phase is in effect through all available sources. Each phase includes unrestricted, voluntary, and/or mandatory water conservation actions to assist in preserving the current water supply and insure that water users have the information to mitigate further water shortages. The following section outlines each section and provides detail on required action for all phases of the management plan. Triggers for each advancing to each phase are outlined as well as intended objectives.

	Phase I	Phase II	Phase III	Phase IV
Lawn Watering	Unrestricted	Voluntary	Mandatory	Mandatory
Swimming Pools	Unrestricted	Unrestricted	Voluntary	Mandatory
Outdoor Fountains & Ponds	Unrestricted	Unrestricted	Voluntary	Mandatory
Washing Vehicles	Unrestricted	Voluntary	Mandatory	Mandatory
Recreation Sprinklers and Outdoor Water Toys	Unrestricted	Unrestricted	Voluntary	Mandatory

Water Shortage Response and Actions

Phase I: Advisory Phase - Unrestricted Watering Conditions

During the advisory phase water users are not required to make water use changes but are encouraged to take steps to conserve water. Under advisory conditions South Jordan City has determined that water supply is enough to meet demand but the supply may not be as healthy as historic levels based on use.

Trigger: Total reservoir storage is not projected to be at standard operating capacity by April 1, due to low snow pack, precipitation, and/or lack of carryover storage from the previous year. Other total reservoir storage and predicted inflows are significantly below historic levels for the specific time of year and demands may not be met.

Objective: To prepare utility for future shortages as well as water users therefore allowing all parties time for planning and coordination.

Phase II: Moderate Water Shortage – Voluntary Action Required

Water users are asked to follow the following voluntary conservation measures. However, current water waste ordinances will be enforced.

Requested voluntary measures:

Lawn Watering: Limit watering to 3 times per week during peak summer months and once per week in spring and fall months. Restrict watering during periods of precipitation and between the hours of 8:00am and 8:00pm

Washing Vehicles: Limit washing vehicles at home, instead use local efficient car wash stations.

Trigger: Supply levels from the advisory stage have not improved. Demand levels indicate the need for more systematic response to manage current water supply. Water levels are at 80% of average annual supply.

Objective: Reduction of demand to meet target consumption levels achieved by voluntary conservation measures. Postpone the advancement to the subsequent stage and more stringent action. Minimize the impact to water users while meeting the targeted water use. Maintain highest water quality through reduction of use.

Termination of Phase: The city manager with the guidance of the South Jordan City Water Manager and direction of JWCDC may revert to Phase I (Advisory Phase) when the conditions and triggers listed have ceased to exist for a reasonable period of time. Upon termination of Phase II the Advisory Phase becomes effective unless otherwise stated.

Phase III: Moderate to Severe Water Shortage – Voluntary and Mandatory Restrictions

Demand reductions are voluntary with the exceptions of lawn watering and washing of personal vehicles. Mandatory restriction are outlined as follows and apply to residential, commercial, and government users.

Lawn Watering: Outdoor watering is restricted to three days each week for residential and commercial users according to street address during peak months (June, July, and August). Outdoor watering for off peak months (May and September) is restricted to twice per week and is outlined as follows.

Peak month watering schedule (June, July, and August):

- Odd numbered addresses: Monday, Wednesday, and Friday
- Even numbered addresses: Tuesday, Thursday, and Saturday
- Spot watering on Sunday

Off peak watering schedule (May and September)

- Odd numbered addresses: Monday and Friday
- Even numbered addresses: Tuesday and Saturday
- Spot watering on Sunday

Swimming Pools: Voluntary use of covers during times pools are not in use and reduce the level by four inches.

Outdoor Fountains: Voluntary cut of use of fountain with spray that exceeds the level of the pond or fountain surface.

Washing Vehicles: Only a bucket may be used to wash vehicles at the home. Taking vehicles to a car wash is suggested. Washing vehicles at commercial car lots is restricted to once per month and at time of sale.

Recreation Sprinklers and Outdoor Water Toys: Voluntary limit of use of outdoor activities that waste water.

Trigger: The water manager along with the city manager will approve the progression to this phase if the objectives of phase II have not been met and additional action is needed. For the moderate to severe phase the specific restrictions will be determined based on season, target demand levels and other considerations. Some considerations considered are if water supply is 70% of the average supply. If supply levels from Phase II have not improved, or if demand levels require a greater need for a systematic response to manage the situation.

Objective: Achieve targeted consumption levels and goals by restricting outlined water use. Ensure adequate water supply during the period of restrictions to protect public safety. Minimize disruption to water users while meeting consumption goals and maintain highest water quality through periods of shortages.

Termination of phase: The city manager with the guidance of the South Jordan City Water Manager and direction of JVWCD may revert to Phase II (Moderate Water Shortage) when the conditions and triggers listed have ceased to exist for a reasonable period of time. Upon termination of Phase III, Phase II becomes effective unless otherwise stated.

Phase IV: Sever Water Shortage – Mandatory Watering Restrictions

Elements of Phase IV will become mandatory and enforcement of these will commence immediately, at the discretion of the Water Manager and City Manager water curtailments may also be implemented for certain types of non-essential use.

Lawn Watering: Lawn Watering: Outdoor watering is restricted to two days each week for residential and commercial users according to street address during peak months (June, July, and August). During off peak months (May and September) outdoor watering is restricted to once per week and is defined by street address.

Peak month watering schedule (June, July, and August):

- Odd numbered addresses: Monday and Friday
- Even numbered addresses: Tuesday and Saturday
- Spot watering on Sunday

Off peak watering schedule (May and August)

- Odd numbered addresses: Monday
- Even numbered addresses: Thursday
- Spot watering on Sunday

Swimming Pools: Use of pool covers when pool is not in use is mandatory and level of pool must be four inches below the spill line. Pools are also restricted from being filled.

Outdoor Fountains: water must not spray above the fountain or pond surface. Ponds and fountains are restricted from being filled.

Washing Vehicles: Prohibited at residence and must be taken to a commercial car wash station. Commercial car dealership lots are restricted to watering once per month and at time of sale.

Recreation Sprinklers and Outdoor Water Toys: Prohibited

Triggers: The water manager along with the city manager will approve the progression to phase IV if the objectives of phase III have not been met and additional action is needed. For the severe phase the specific restrictions will be determined based on season, target demand levels and other considerations. Some considerations considered are if water supply is 60% of the average supply. If supply levels from Phase III have not improved, or if demand levels require a greater need for a systematic response to manage the situation.

Objective: Achieve targeted consumption levels and goals by restricting outlined water use. Ensure adequate water supply during the period of restrictions to protect public safety. Minimize disruption to water users while meeting consumption goals and maintain highest water quality through periods of shortages. To ensure that water saving goals are met through clear defined restrictions.

Termination of phase: The city manager with the guidance of the South Jordan City Water Manager and direction of JWCD may revert to Phase III (Moderate to Severe Water Shortage) when the conditions and triggers listed have ceased to exist for a reasonable period of time. Upon termination of Phase IV, Phase III becomes effective unless otherwise stated.

Secondary Water Shortage Management Plan

Residential Secondary Use and Conservation Guide

What is Secondary Water Shortage Management Plan?

South Jordan City provides secondary water to over XXXX residents. This plan is aimed at ensuring those who have access to secondary water are able to continue use throughout periods of drought or water shortage.

It may be necessary for South Jordan City to ask for voluntary restrictions of use or enact mandatory restrictions in order to preserve its water supply. The Secondary water system in the City is supplied by a series of canals that receive water from Utah Lake. It is increasingly important to maintain a certain level of water in Utah Lake and if levels drop below a pre-determined point service of secondary water will be stopped.

Secondary Water Shortage Phases

To prevent the interruption of water South Jordan City has put into place this plan with the following phases:

- Phase I: Advisory Phase (Green)
- Phase II: Moderate Water Shortage (Yellow)
- Phase III: Severe Water Shortage (Red)

	Phase I	Phase II	Phase III
Lawn Watering	Unrestricted	Voluntary	Mandatory

Phase I: Advisory Phase – Unrestricted Watering Conditions

During the advisory phase water users are not required to make water use changes but are encouraged to take steps to conserve secondary water. Under advisory conditions South Jordan City has determined that the secondary water supply enough to meet demand but the supply may not be as healthy as historic levels based on use.

Trigger: Utah Lake levels may not be at normal historic levels by April 1, due to low snow pack, precipitation, and/or lack of carryover storage from the previous year. Other predicted inflows are significantly below historic levels for the specific time of year and demands may not be met.

Objective: To prepare utility for future shortages as well as water users therefore allowing all parties time for planning and coordination.

Phase II: Moderate Water Shortage – Voluntary Action Required

Water users are asked to follow the following voluntary secondary water conservation measures. However, current water waste ordinances will be enforced.

Requested voluntary measures:

Lawn Watering: Outdoor watering is suggested to be reduced to two days each week for residential users according to street address during peak months (June, July, and August). During off peak months (May and September) outdoor watering is restricted to once per week and is defined by street address.

Peak month watering schedule (June, July, and August):

- Odd numbered addresses: Monday and Friday
- Even numbered addresses: Tuesday and Saturday
- Spot watering on Sunday

Off peak watering schedule (May and August)

- Odd numbered addresses: Monday
- Even numbered addresses: Thursday
- Spot watering on Sunday

Trigger: Supply levels from the advisory stage have not improved. Demand levels indicate the need for more systematic response to manage current water supply. Water levels are at 80% of average annual supply.

Objective: Reduction of demand to meet target consumption levels achieved by voluntary conservation measures. Postpone the advancement to the subsequent stage and more stringent action. Minimize the impact to water users while meeting the targeted water use.

Termination of Phase: The City Manager with the guidance of the South Jordan City Water Manager may revert to Phase I (Advisory Phase) when the conditions and triggers listed have ceased to exist for a reasonable period of time. Upon termination of Phase II the Advisory Phase becomes effective unless otherwise stated.

Phase III: Sever Water Shortage – Mandatory Watering Restrictions

Elements of Phase III will become mandatory and enforcement of these will commence immediately, at the discretion of the Water Manager and City Manager water curtailments may also be implemented for certain types of non-essential use.

Lawn Watering: All outdoor watering done by Secondary water provided by South Jordan City is restricted to two days each week for residential users according to street address during peak months (June, July, and August). During off peak months (May and September) outdoor watering is restricted to once per week and is defined by street address.

Peak month watering schedule (June, July, and August):

- Odd numbered addresses: Monday and Friday
- Even numbered addresses: Tuesday and Saturday
- Spot watering on Sunday

Off peak watering schedule (May and August)

- Odd numbered addresses: Monday
- Even numbered addresses: Thursday
- Spot watering on Sunday

Triggers: The water manager along with the city manager will approve the progression to phase III if the objectives of phase II have not been met and additional action is needed. For the severe phase the specific restrictions will be determined based on season, target demand levels and other considerations. Some considerations considered are if water supply is 60% of the average supply. If supply levels from Phase II have not improved, or if demand levels require a greater need for a systematic response to manage the situation.

Objective: Achieve targeted levels and goals by restricting outdoor water use. Ensure adequate water supply during the period of restrictions. Minimize disruption to water users while meeting consumption goals. To ensure that water saving goals are met through clear defined restrictions.

Termination of phase: The city manager with the guidance of the South Jordan City Water Manager may revert to Phase II (Moderate Water Shortage) when the conditions and triggers listed have ceased to exist for a reasonable period of time. Upon termination of Phase III, Phase II becomes effective unless otherwise stated.

Enforcement

South Jordan City is committed to protecting our water supply and to ensure there is a continual supply of water for the future for health and safety reasons the City has established an enforcement strategy. Enforcement is intended to educate water users about proper use of water and the conservation measures and reserves punitive action for repeat violators. All fines collected will be used as part of the water conservation program to further water conservation education.

- First Violation: Hand delivered notice of violation and instructions of how the violation can be corrected.
- Second Violation: \$100 fine along with a warning of actions. The violator will also be given the opportunity to attend a water conservation course by South Jordan City to avoid paying the \$100 fine.
- Third Violation: \$500 fine

Public Notification and Education

Notifying and educating South Jordan City water users is imperative to the success of the water management plan and the city will make every measure possible to insure residents know and understand the current restrictions. The City will use the following measures to educate the public:

-Website and Social Media: The City will publish the current water use phase along with supporting information on its website www.sjc.utah.gov and the water conservation website www.watersmartsojo.org. Information will also be published on its official social media outlets.

-City Newsletter: The City will publish in the South Jordan City newsletter along with the utility bill the current water use phase.

-City Marquees and Signs: The City will use its marquees and signs as the water use phase changes to alert users to the adjusting conservation measures, as well as continuous messages throughout peak watering season.

-Direct Mail: In cases of severe water shortages the City will use direct mail to ensure that all residents and business are informed of the water outlook and the restrictions instated.

Appendix C

City Code Chapter 13 – Water Service System

13.04.260: WASTE PROHIBITED:

- A. Maintenance of Connected Facilities: All users of water service shall be required to keep their sprinklers, faucets, valves, hoses and all apparatus connected to the water system in good condition at their own expense and all waterways closed when not in use. When it shall be found that any fixture on the user's premises is broken or not in serviceable condition, the user shall be notified at once of the fact and should said user fail to remedy the defect within thirty (30) days, water service shall be discontinued until such apparatus has been inspected by the water superintendent or his or her agent and determined to be in a serviceable condition. Any deposit or prepaid charges on the account of such user shall be forfeited to the city as an inspection and handling fee. After inspection and approval of any required repairs by the public services department, service may be restored pursuant to conditions of this chapter. No charge shall be made for a billing period if water service is discontinued during every day of such billing period.
- B. Service Interruption: If the water superintendent shall determine that a user engages in practices which result in the needless waste of a significant amount of water, and continues to do so after reasonable notice to discontinue said wastefulness has been given, the city may interrupt water service for up to twenty four (24) hours per act of waste. Notice of an interruption made hereunder shall be given at least one day prior to the time at which the interruption occurs. It is a waste of water to permit water to run without making due efforts to conserve the water.
- C. City Council Action: When referred to the city council, the city council may consider discontinuing permanently the water service to a wasteful user. If the city council elects to consider the matter of discontinuance, it shall give notice to the water user of the intention to discontinue his or her water service at least seven (7) days prior to the meeting of the city council at which such discontinuance is to be considered. The notice shall inform the user of the time and place of the meeting and of the charges which led to the consideration of discontinuance. Said water user shall have opportunity to appear with or without counsel and present his or her reasons why the water service should not be discontinued. Upon hearing, the city council shall notify said user in writing of its determination and if the determination is to discontinue the user's water service, it shall notify said user of the period during which the service will remain discontinued. (Ord. 2000-28)

Appendix D

Chapter 16.30 WATER EFFICIENT LANDSCAPING

16.30.010: PURPOSE:

- A. The city council has found that: 1) water resources are limited and conservation efforts must be implemented to sustain growth, 2) much of the city culinary water resources are used for outdoor purposes, including watering landscaping, and 3) the city desires to promote the design, installation and maintenance of landscapes that are both attractive and water efficient.
- B. The city council has determined that it is in the public interest to conserve the public water resources and to promote water efficient landscaping. The purpose of this chapter is to protect and enhance the community's environmental, economic, recreational and aesthetic resources by promoting efficient use of water in the community's landscaped areas, reducing water waste and establishing a process for design, installation and maintenance of water efficient landscaping throughout the city. (Ord. 2007-01, 1-16-2007)

16.30.020: DEFINITIONS:

The following definitions shall apply to this chapter:

ADMINISTRATIVE STANDARDS: The set of rules, procedures and requirements set forth in a landscaping ordinance associated with making permit application, assembling materials for public review, meeting the requirements of the landscaping ordinance, seeking approvals, enforcement, conducting site inspections and filing reports.

BUBBLER: An irrigation head that delivers water to the root zone by "flooding" the planted area, usually measured in gallons per minute. Bubblers exhibit a trickle, umbrella or short stream pattern.

DRIP EMITTER: A drip irrigation fitting that delivers water slowly at the root zone of the plant, usually measured in gallons per hour.

EVAPOTRANSPIRATION (ET): The quantity of water evaporated from adjacent soil surfaces and transpired by plants during a specific time, expressed in inches per day, month or year. See also definition of Reference Evapotranspiration Rate Or ETO.

EXTRA DROUGHT TOLERANT PLANT: A plant that can survive without irrigation throughout the year once established, although supplemental water may be desirable during drought periods for improved appearance and disease resistance.

GROUND COVER: Material planted in such a way as to form a continuous cover over the ground

that can be maintained at a height not more than twelve inches (12").

HARDSCAPE: Patios, decks and paths, but does not include driveways, parking lots and sidewalks.

IRRIGATED LANDSCAPED AREA: All portions of a development site to be improved with planting and irrigation. Natural open space areas shall not be included in the irrigated landscaped area.

IRRIGATION CONTRACTOR: A person who has been certified by the Irrigation Association to install irrigation systems or as otherwise approved by the public services department.

IRRIGATION DESIGNER: A person who has been certified by the Irrigation Association to prepare irrigation system designs, or a landscape architect or as otherwise approved by the public services department.

IRRIGATION EFFICIENCY: The measurement of the amount of water beneficially applied divided by the total amount of water applied. Irrigation efficiency is derived from measurements and estimates of irrigation system hardware characteristics and management practices.

IRRIGATION PLAN: The plan which shows the components of the irrigation system with water meter size, backflow prevention, rain shutoff device, precipitation rates, flow rate operating pressure for each irrigation zone, and identification of all irrigation equipment.

LANDSCAPE ARCHITECT: A person who holds a certificate to practice landscape architecture in the state of Utah.

LANDSCAPE DESIGNER: A person who has been certified by the Utah Nursery and Landscape Association to prepare landscape plans or as otherwise approved by the public services department.

LANDSCAPE EDUCATION PACKAGE: A package of documents which is intended to inform and educate water users in the city about water efficient landscaping. The package includes the principles of water efficient landscape design, a listing of water conserving plants, a listing of certified landscape designers, landscape architects, certified irrigation designers, certified irrigation contractors, an information packet about various area demonstration projects, city's water rates, billing format for water use, and the economics of installing and maintaining water efficient landscaping.

LANDSCAPE IRRIGATION AUDITOR: A person who has been certified by the Irrigation Association to conduct a landscape irrigation audit or as otherwise approved by the public services department.

LANDSCAPE PLAN DOCUMENTATION PACKAGE: The preparation of graphic and written criteria, specifications and detailed plans to arrange and modify the effects of natural features such as plantings, ground and water forms, circulation, walks and other features to comply with the provisions of this chapter. The landscape plan documentation package shall include a project data sheet, a planting plan, an irrigation plan, a grading plan, a soils report, a landscape water allowance and an irrigation schedule.

LANDSCAPE WATER ALLOWANCE: For design purposes, the upper limit of annual applied water for the established landscaped area. It is based upon the local reference evapotranspiration rate, the ET adjustment factor and the size of the landscaped area.

LANDSCAPED ZONE: A portion of the landscaped area having plants with similar water needs, areas with similar microclimate (i.e., slope, exposure, wind, etc.) and soil conditions, and areas that will be similarly irrigated. A landscaped zone can be served by one irrigation valve, or a set of valves with the same schedule.

LANDSCAPING: Any combination of living plants, such as trees, shrubs, vines, ground covers, flowers, turf or ornamental grass; natural features such as rock, stone or bark chips; and structural features, including, but not limited to, fountains, reflecting pools, outdoor artwork, screen walls, fences or benches.

MULCH: Any material such as bark, wood chips, rocks, stones or other similar materials left loose and applied to the soil.

NONDROUGHT TOLERANT PLANT: A plant that will require regular irrigation for adequate appearance, growth and disease resistance.

PLANTING PLAN: A plan which clearly and accurately identifies and locates new and existing trees, shrubs, ground covers, turf areas, driveways, trails, sidewalks, hardscape features and fences.

PRECIPITATION RATE: The rate at which water is applied per unit of time, usually measured in inches per hour.

RAIN SHUTOFF DEVICE: A device wired to an automatic controller that shuts off the irrigation system when it rains.

RECONSTRUCTED LANDSCAPING: Any existing approved landscaping and irrigation that is removed and replaced as part of new construction.

REFERENCE EVAPOTRANSPIRATION RATE OR ETO: The standard measurement of environmental parameters which affect the water use of plants. ETO is expressed in inches per day, month or year and is an estimate of the evapotranspiration of a large field of four (4) to five inches (5") tall, cool season grass that is well watered. The average growing season ETO for the South Jordan City area is based on the weekly calculation made by Utah State University which can be found on its internet web page. See also definition of Evapotranspiration (ET).

RUNOFF: Irrigation water that is not absorbed by the soil or landscaped area to which it is applied and which flows onto other areas.

SOILS REPORT: A report by a soils laboratory indicating soil type, soil depth, uniformity, composition, bulk density, infiltration rates, and pH for the topsoil and subsoil for a given site. The soils report also includes recommendations for soil amendments.

SPRAY SPRINKLER: An irrigation head that sprays water through a nozzle in a fixed and constant pattern.

STREAM SPRINKLER: An irrigation head (rotor or impact) that projects water in single or multiple streams.

TURF: A surface layer of earth containing mowed grass with its roots.

WASTE OF WATER: Means and includes, but is not limited to:

- A. The use of water for any purpose, including landscape irrigation, which consumes or for which is applied substantial amounts of excess water beyond the reasonable amount required by the use, whether such excess water remains on the site, evaporates, percolates underground, goes into the sewer system, or is allowed to run into the gutter or street. Every water consumer is deemed to have under his control at all times the water lines and facilities, other than water utility facilities, through which water is being supplied and used to his premises, and to know the manner and extent of his water use and excess runoff;
- B. The excessive use, loss or escape of water through breaks, leaks or malfunctions in the water user's plumbing for any period of time after such escape of water should reasonably have been discovered and corrected. It shall be presumed that a period of forty eight (48) hours after the water user discovers such break, leak or malfunction or receives notice from the city of such condition, whichever occurs first, is a reasonable time to correct such condition; and
- C. Washing sidewalks, driveways, parking areas, tennis courts or other paved areas except to alleviate immediate fire, health or safety hazards.

WATER CHECK: A water use efficiency review. See also definition of Water Use Efficiency Review.

WATER CONSERVING PLANT: A plant that can generally survive with available rainfall once established, although supplemental irrigation may be needed or desirable during the growing season.

WATER USE EFFICIENCY REVIEW: An on site survey and measurement of irrigation equipment and management efficiency, and the generation of recommendations to improve efficiency. (Ord. 2007-01, 1-16-2007)

16.30.030: COMMERCIAL, INDUSTRIAL AND MULTI-FAMILY DEVELOPMENT:

- A. **Applicability:** The provisions of this section shall apply to landscaping for all new and reconstructed landscaping for public agency projects, private commercial and industrial projects, developer installed landscaping in multi-family residential projects and developer installed landscaping in single-family projects that require project review and approval by the city. Such review may include site plan review, modified conditional use permit review and building permits issued for exterior modifications to commercial and multi-family buildings. This section does not apply to homeowner provided landscaping at single-family projects (see section [16.30.040](#) of this chapter), or registered historical sites.
- B. **Landscape Plan Documentation Package:** A landscape plan documentation package shall be submitted to and approved by the public services department prior to the issuance of any permit or site plan approval. A copy of the approved landscape plan documentation package shall be provided to the property owner, developer or site manager and to the local retail water purveyor. The landscape plan documentation package shall be prepared by a registered landscape architect or a landscape designer. The irrigation plan shall be prepared by an irrigation designer

or a landscape architect. City landscaping and irrigation standards shall be incorporated into the landscape plan documentation package. The landscape plan documentation package shall consist of the following items:

1. Project Data Sheet: The project data sheet shall contain the following:
 - a. Project name and address.
 - b. Applicant or applicant's agent name, address, phone and fax number.
 - c. Landscape designer/landscape architect's name, address, phone and fax number.
 - d. Landscape contractor's name, address, phone and fax number.
2. Planting Plan: A detailed planting plan shall be drawn at a scale that clearly identifies the following:
 - a. Location of all plant materials, a legend with botanical and common names, and size of plant materials.
 - b. Property lines and street names.
 - c. Existing and proposed buildings, walls, fences, light poles, utilities, paved areas and other site improvements.
 - d. Existing trees and plant materials to be removed or retained.
 - e. Designation of landscaped zones.
3. Irrigation Plan: A detailed irrigation plan shall be drawn at the same scale as the planting plan and shall contain the following information:
 - a. Layout of the irrigation system and a legend summarizing the type and size of all components of the system, including manufacturer name and model numbers.
 - b. Static water pressure in pounds per square inch (psi) at the point of connection to the public water supply.
 - c. Flow rate in gallons per minute and design operating pressure in psi for each valve and precipitation rate in inches per hour for each valve with sprinklers.
4. Grading Plan: A grading plan shall be drawn at the same scale as the planting plan and shall contain the following information:
 - a. Property lines and street names, existing and proposed buildings, walls, fences, utilities, paved areas and other site improvements.
 - b. Existing and finished contour lines and spot elevations as necessary for the proposed site improvements.

5. Soils Report: A soils report will be required where irrigated landscaped areas consisting of grass or similar turf exceed thirty three percent (33%) of the overall landscaped area. The soils report shall describe the depth, composition and bulk density of the topsoil and subsoil at the site, and shall include recommendations for soil amendments. The planting plan shall incorporate the recommendations of the soils report into the planting specifications.

6. Landscape Water Allowance: The annual landscape water allowance shall be calculated using the following equation:

$$\text{Landscape water allowance} = \text{ETO} \times 1.0 \times 0.62 \times A$$

Where landscape water allowance is in gallons per growing season

ETO= Reference evapotranspiration rate in inches per growing season

1.0=ETO adjustment factor, one hundred percent (100%) of turf grass ETO (growing season adjustment factor)

0.62=Conversion factor, inches/year to gallons/year

A=Total irrigated landscape area in square feet

7. Irrigation Schedule: A monthly irrigation schedule shall be prepared that covers the initial ninety (90) day plant establishment period and the typical long term use period. This schedule shall consist of a table with the following information for each valve:

- a. Plant type (for example, turf, trees, low water use plants).
- b. Irrigation type (for example, sprinklers, drip, bubblers).
- c. Flow rate in gallons per minute.
- d. Precipitation rate in inches per hour (sprinklers only).
- e. Run times in minutes per day.
- f. Number of water days per week.
- g. Cycle time to avoid runoff.

C. Landscape Design Standards: The following standards shall be implemented in the design of landscaping:

1. Plant Selection: Plants selected for landscape areas shall consist of plants that are well suited to the microclimate and soil conditions at the project site. Plants with similar water needs shall be grouped together as much as possible. For projects located at the interface between urban areas and natural open space (nonirrigated), extra drought tolerant plants shall be selected that will blend with the native vegetation and are fire resistant or fire retardant. Plants with low fuel volume or high moisture content shall be emphasized. Plants that tend to accumulate excessive amounts of dead wood or

debris shall be avoided. Areas with slopes greater than thirty percent (30%) shall be landscaped with deep rooting, water conserving plants for erosion control and soil stabilization. Park strips and other landscaped areas less than eight feet (8') wide shall be landscaped with water conserving plants and/or grass.

2. Mulch: After completion of all planting, all irrigated nonturf areas shall be covered with a minimum layer of four inches (4") of mulch to retain water, inhibit weed growth, and moderate soil temperature. Nonporous material shall not be placed under the mulch.
3. Soil Preparation: Soil preparation shall be suitable to provide healthy growing conditions for the plants and to encourage water infiltration and penetration. Soil preparation shall include scarifying the soil to a minimum depth of six inches (6") and amending the soil with organic material as per specific recommendations of the landscape designer/landscape architect based on the soils report.
4. Irrigation Design Standards:
 - a. Irrigation: Irrigation design standards for this chapter shall be as outlined in the latest version of the "Minimum Standards For Efficient Landscape Irrigation System Design And Installation" as specified in the city standard specifications. In addition, the following portions of this section shall also be applicable.
 - b. Landscape Water Meter: A water meter and backflow prevention assembly that are in compliance with state code shall be installed for landscape irrigation systems, and the landscape water meter and backflow prevention assembly shall be separate from the water meter and backflow prevention assembly installed for indoor uses. The size of the meter shall be determined based on irrigation demand.
 - c. Pressure Regulation: A pressure regulating valve shall be installed and maintained by the consumer if the static service pressure exceeds eighty (80) pounds per square inch (psi). The pressure regulating valve shall be located between the landscape water meter and the first point of water use, or first point of division in the pipe, and shall be set at the manufacturer's recommended pressure for sprinklers.
 - d. Automatic Controller: All irrigation systems shall include an electric automatic controller with multiple program and multiple repeat cycle capabilities and a flexible calendar program. All controllers shall be equipped with an automatic rain shutoff device.
 - e. Slope Runoff: On slopes exceeding thirty percent (30%), the irrigation system shall consist of drip emitters, bubblers or sprinklers with a maximum precipitation rate of 0.85 inches per hour and adjusted sprinkler cycle to eliminate runoff.
 - f. Valves: Each valve shall irrigate a landscape with similar site, slope and soil conditions and plant materials with similar watering needs. Turf and nonturf areas shall be irrigated on separate valves.
 - g. Drip Emitters And Bubblers: Drip emitters or a bubbler shall be provided for each tree where practicable. Bubblers shall not exceed 1.5 gallons per minute per device. Bubblers for trees shall be placed on a separate valve unless specifically exempted by the public services department due to the limited number of trees on the project site.
 - h. Sprinklers: Sprinklers shall have matched precipitation rates with each control valve circuit.

- i. Elevation Variations: Check valves shall be required where elevation differences will cause low head drainage. Pressure compensating valves and sprinklers shall be required where a significant variation in water pressure will occur within the irrigation system due to elevation differences.
- j. Drip Lines: Drip irrigation lines shall be placed underground or otherwise permanently covered, except for drip emitters and where approved as a temporary installation. Filters and end flush valves shall be provided as necessary.
- k. Overhead Sprinklers: Irrigation zones with overhead spray or stream sprinklers shall be designed to operate between six o'clock (6:00) P.M. and ten o'clock (10:00) A.M. to reduce water loss from wind and evaporation. This would exclude drip or bubbler zones.
- l. Soils With Slow Infiltration: Program valves for multiple repeat cycles where necessary to reduce runoff, particularly slopes and soils with slow infiltration rates.

D. Plan Review, Construction Inspection And Postconstruction Monitoring: The following procedures shall be implemented in the plan review, construction inspection and postconstruction monitoring of landscaping:

- 1. As part of the site plan review and building permit process, a copy of the landscape plan documentation package shall be submitted to the city for review and approval before construction begins. With the landscape plan documentation package, a copy of the landscape water allowance worksheet shall be completed by a landscape designer and submitted to the city.
- 2. All landscape plan documentation packages submitted must be certified by a licensed landscape architect or approved landscape designer. The irrigation plan must be prepared by an approved irrigation designer or a landscape architect.
- 3. All landscape irrigation systems shall be installed by an irrigation contractor. The person representing the contracting firm shall be a full time employee of the firm and shall be directly involved with the project, including at least weekly site visits during construction.
- 4. All installers, designers and auditors shall meet state and local license, insurance and bonding requirements, and be able to show proof of such upon demand.
- 5. During construction, site inspection of the landscaping may be performed by the city (see section [16.30.060](#) of this chapter).
- 6. Following construction and prior to the release of the improvement guarantee bond posted for the project, an inspection shall be scheduled with the public services department to verify compliance with the approved landscape and irrigation plans.
- 7. Following construction and prior to release of the improvement guarantee bond posted for the project, a water use efficiency review will be conducted by a landscape irrigation auditor. The auditor shall be independent of the contractor, design firm and owner/developer of the project. The water performance audit will verify that the irrigation system complies with the minimum standards required by this chapter. The minimum efficiency required for the irrigation system is between fifty percent (50%) and sixty percent (60%) for distribution efficiency for all fixed spray systems and between sixty percent (60%) and seventy percent (70%) distribution efficiency for all rotor systems. The auditor

shall furnish a certificate to the city, the designer, the installer and the owner/developer certifying compliance with the minimum distribution requirements, and an irrigation schedule. Compliance with this provision is required before the city will release the bond for the project. (Ord. 2007-01, 1-16-2007)

16.30.040: SINGLE-FAMILY RESIDENTIAL DEVELOPMENT:

A. General: The provisions of this section apply to landscaping for all new and reconstructed landscaping for single-family residential dwellings. This section does not apply to residential developments with developer installed landscaping (see section [16.30.030](#) of this chapter), or registered historical sites.

B. Provisions For New Or Reconstructed Landscapes:

1. Landscape Education Package: A copy of a landscape education package shall be given to all new single-family homeowners by the city at the time of application for a building permit and all new or modified water account owners. The landscape education package, prepared by the public services department, shall consist of the following items:
 - a. Principles of water efficient landscape design.
 - b. A listing of water conserving plants.
 - c. A listing of certified landscape designers, certified irrigation system designers and suppliers and certified landscape irrigation contractors.
 - d. An information packet about the various area demonstration gardens.
 - e. An information packet about the city water rate schedule, billing format for water use and the economics of installing and maintaining a water efficient landscape.
2. Postinstallation: After the landscaping has been installed, the homeowner may notify the public services department of its completion and request a listing of landscape auditors who can perform a water use efficiency review, also called a water check. The water check will determine the irrigation system efficiency, make recommendations for improvements, and provide the homeowner with an irrigation schedule.

C. Park Strips And Other Landscaped Areas: Park strips and other landscaped areas less than eight feet (8') wide shall be landscaped with water conserving plants and/or grass. (Ord. 2007-01, 1-16-2007)

16.30.050: PROHIBITED WATERING PRACTICES:



- A. Waste Of Water: Regardless of the age of a development (commercial, industrial, office or residential), water shall be properly used. Waste of water is prohibited.
- B. Restricted Watering Time: Watering hours may be restricted by resolution of the city council as needed. (Ord. 2007-01, 1-16-2007)

16.30.060: ENFORCEMENT AND PENALTY FOR VIOLATIONS:

- A. Enforcement Authority: The city building and engineering inspectors, code enforcement officers, police officers and others designated by the city manager are authorized to enforce all provisions of this chapter.
- B. Violation of This Chapter: Any water consumer who violates any provisions of this chapter shall be issued a written notice of violation. The written notice shall be affixed to the property where the violation occurred and mailed to the consumer of record and to any other person known to the city who is responsible for the violation and its corrections. Such notice shall describe the violation and order that it be corrected, cured or abated immediately or within such specified time as the city determines is reasonable under the circumstances. Failure to receive such notice shall not invalidate further actions by the city. If the notice is not followed, the city may issue a citation for a misdemeanor infraction. If the alleged violator is convicted, the municipal court may order compliance with any of the provisions of this chapter as a condition for receiving continued water service. (Ord. 2007-01, 1-16-2007)

Appendix E

Leak Notification Door Hanger

 <p><u>Water Leak Notification</u></p> <p>Dear Resident,</p> <p>Sorry that we missed you. Our water meter reading analytics system has detected a constant flow through your water meter with abnormally high water consumption and it is believed that you may have a water leak.</p> <p>Please contact Jordan Allen, Water Conservation Coordinator at 801-253-5203 or by email at joallen@sjc.utah.gov to set up an appointment for City Water Division personnel to visit your home and assist you in locating your leak. We appreciate your cooperation as this will assist in the goal to conserve our most precious resource.</p> <p>Sincerely, South Jordan City</p> <p>Home Address _____</p> <p>Date _____</p>	 <div style="text-align: center;">   </div>
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Appendix F

Leak Notification Contact List

Month/Year	Total Water Loss	Days of Loss	Ave. Daily Loss	Annual Prevented Loss	Cost Savings
Mar-18	445,000	22	20,227	7,382,955	\$ 18,457.39
Mar-18	101,000	39	2,590	945,256	\$ 2,363.14
Mar-18	448,000	29	15,448	5,638,621	\$ 14,096.55
Mar-18	105,000	44	2,386	871,023	\$ 2,177.56
Mar-18	82,000	8	10,250	3,741,250	\$ 9,353.13
Mar-18	1,345,000	124	10,847	3,959,073	\$ 9,897.68
Mar-18	567,000	455	1,246	454,846	\$ 1,137.12
Mar-18	541,000	485	1,115	407,144	\$ 1,017.86
Mar-18	485,000	395	1,228	448,165	\$ 1,120.41
Mar-18	465,000	395	1,177	429,684	\$ 1,074.21
Mar-18	464,000	446	1,040	379,731	\$ 949.33
Mar-18	441,000	186	2,371	865,403	\$ 2,163.51
Mar-18	334,000	431	775	282,854	\$ 707.13
Mar-18	331,000	161	2,056	750,404	\$ 1,876.01
Mar-18	317,000	434	730	266,601	\$ 666.50
Mar-18	295,000	145	2,034	742,586	\$ 1,856.47
Mar-18	267,000	453	589	215,132	\$ 537.83
Mar-18	221,000	400	553	201,663	\$ 504.16
Mar-18	6,000	159	38	13,774	\$ 34.43
Mar-18	2,000	60	33	12,167	\$ 30.42
Mar-18	31,000	155	200	73,000	\$ 182.50
Mar-18	11,000	90	122	44,611	\$ 111.53
Mar-18	720	10	72	26,280	\$ 65.70
Mar-18	81,000	161	503	183,634	\$ 459.08
Mar-18	145,000	180	806	294,028	\$ 735.07
Mar-18	128,000	430	298	108,651	\$ 271.63
Mar-18	1,500	14	107	39,107	\$ 97.77
Mar-18	16,000	72	222	81,111	\$ 202.78
Mar-18	51,000	90	567	206,833	\$ 517.08
Mar-18	84,000	125	672	245,280	\$ 613.20
Mar-18	18,000	185	97	35,514	\$ 88.78
Mar-18	85,000	210	405	147,738	\$ 369.35
Mar-18	5,500	5	1,100	401,500	\$ 1,003.75
Mar-18	46,000	155	297	108,323	\$ 270.81
Mar-18	96,500	469	206	75,101	\$ 187.75
Mar-18	33,000	11	3,000	1,095,000	\$ 2,737.50
Mar-18	131,000	310	423	154,242	\$ 385.60
Mar-18	29,000	135	215	78,407	\$ 196.02
18-Apr	209,000	215	972	354,814	\$ 887.03
18-Apr	195,000	338	577	210,577	\$ 526.44
18-Apr	194,000	464	418	152,608	\$ 381.52
18-Apr	190,000	469	405	147,868	\$ 369.67
18-Apr	184,000	279	659	240,717	\$ 601.79
18-Apr	180,000	140	1,286	469,286	\$ 1,173.21
18-Apr	173,000	461	375	136,974	\$ 342.43
18-Apr	167,000	477	350	127,788	\$ 319.47
18-Apr	157,000	77	2,039	744,221	\$ 1,860.55
18-Apr	362,000	15	24,133	8,808,667	\$ 22,021.67
18-Apr	339,000	19	17,842	6,512,368	\$ 16,280.92
18-Apr	302,000	30	10,067	3,674,333	\$ 9,185.83
18-Apr	163,000	485	336	122,670	\$ 306.68
18-May	414,000	22	18,818	6,868,636	\$ 17,171.59
18-May	308,000	495	622	227,111	\$ 567.78
18-May	307,000	183	1,678	612,322	\$ 1,530.81
18-May	234,000	248	944	344,395	\$ 860.99
18-May	1,160,000	40	29,000	10,585,000	\$ 26,462.50
	13,493,220			71,747,046	\$ 179,367.61